6/16/88 B6800-1 A

NUEXCO

Monthly Report

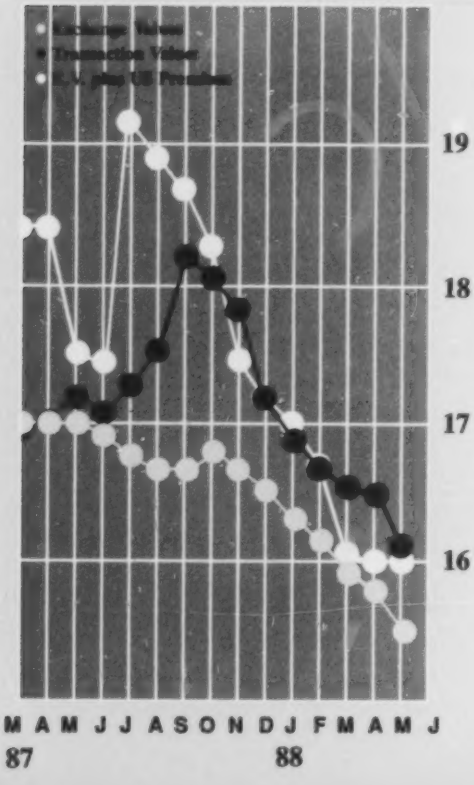
June 1988 Number 238

New Government Pledges to Close Schleswig-Holstein Nuclear Plants 14

Japan Starts Up Prototype Enrichment Plant. 15

Agreement Reached to Scrap Shoreham. 17

Trends in Natural Uranium Contracting 18



NUEXCO

NUEXCO INTERNATIONAL CORPORATION

CHAIRMAN - Oren L. Benton
CHIEF EXECUTIVE OFFICER - Charles H. Peterson

INTERNATIONAL HEADQUARTERS

Three Park Central, Suite 900 | 1515 Arapahoe Street | Denver, Colorado 80202 USA
Telephone: (303) 893-4015 | Telecopy: (303) 825-4821 | Telex: 450202 (NUEXCO DVR)

James E. Lewis	Financial Services	Denver
Fred Lawrence	Consulting Services	Denver
R. Wesley Miller	Analytical Services	Denver
Don A. Nichols	Acquisition/Merger Services	Denver
Bob Steele	Minerals Economic Services	Denver
Frederick J. Boyne	General Counsel	Denver

PRINCIPAL SUBSIDIARIES

NUEXCO TRADING CORPORATION

Earl E. Hoellen, Jr.	President	Denver
George White, Jr.	Vice President	Menlo Park
James E. Vaughan	Vice President	Ferney-Voltaire
Walt H. Wolf	Commercial Director	Washington, D.C.
Robert J. Alexander	Commercial Representative	Denver
Clark M. Beyer	Commercial Representative	Denver
Donald W. Radcliffe	Commercial Representative	Denver
Kathryn K. Bowen	Commercial Representative	Ferney-Voltaire
James J. Lightner	Commercial Representative	Ferney-Voltaire
R. Lee Clanton, Jr.	Commercial Representative	Washington, D.C.
Kevin B. Jordan	Contract Controller	Denver

NUEXCO INFORMATION SERVICES COMPANY

R. Gene Clark	President	Denver
France A. Head	NUEXCO Monthly Report	Denver
Treva E. King	Director of Market Analysis	Denver
Carolyn B. McCants	Intl. Directory of Nuclear Utilities	Denver
Thomas C. Pool	Supply Analysis	Denver
David S. Schramm	Market Analysis	Denver
John M. Vallance	Demand Analysis	Denver
Anita E. Blumenthal	SWUCO Monthly Report	Washington, D.C

CONCORD NUEXCO INTERNATIONAL TRADE COMPANY

Wayne D. Fowler	President	Denver
Gerald L. Murdock	Senior Executive-Far East	Hong Kong
Donald P. Ebright	Senior Executive-Europe	Zurich
Christian C. Guitton	Commercial Representative	Tokyo

INTERNATIONAL ADVISORY COMMITTEE

J. Robert (Bob) Wolcott Chairman (USA)	**O.J.C. (John) Runnalls** (Canada)	**Hans W. Vogt** (Switzerland)
T.J. (Tom) Barendregt (The Netherlands)	**George J. Stathakis** (USA)	**Chris I. von Christierson** (South Africa)
Lars Halle (Sweden)	**James C.C. Stewart** (U.K.)	**W. Bryan Webster** (USA)

NUEXCO

MONTHLY REPORT ON THE NUCLEAR FUEL MARKET

June 1988 No. 238

R. GENE CLARK, *EDITOR* FRANCE A. HEAD, *ASSOCIATE EDITOR*

PRICING
Nuexco Market Values Table 1
Natural Uranium and Conversion 2
Enriched Uranium and SWU 3

CURRENT MARKET DATA
Nuexco Market Values Expressed in Selected Currencies 5
Recent Transactions 7
Supply and Demand Tables 9

RECENT DEVELOPMENTS
Australia. 14
Federal Republic of Germany 14
France. 14
Japan 15
United States 17

ANALYSIS AND COMMENTARY
Trends in Natural Uranium Contracting. 18

HISTORICAL MARKET DATA
Graph of Exchange Value and Transaction Value 23
Historical Exchange Values and Transaction Values 24
Historical Conversion Values and UF_6 Values 25
Graph of World Uranium Production 26
US Uranium Marketing Activities Statistics 27
Volume and Price of Uranium Deliveries to the European Community . . . 28

GOVERNMENT STATISTICS
Australia 29
Canada 30
South Africa 31
United States 32

NOTICE

This Report is prepared especially for Subscribers and is furnished to them for their use only. Except for internal use by Subscribers, no part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of Nuexco. Neither this Report, nor copies of any portion thereof, may be lent, sold or given to non-Subscribers.

The information in this Report was gathered from sources Nuexco believes to be accurate. However, Nuexco makes no warranty, express or implied, and assumes no legal liability or responsibility for the accuracy, completeness or usefulness of any information contained herein. © 1988 Nuexco Services Ltd. ISSN 0742-4582

PRICING

May 31, 1988	Market Values	Active Supply[1] (thousands)	Active Demand[1] (thousands)
EXCHANGE VALUE[1]	**$15.40**lb U_3O_8	6,990[2]	910[2]
US Premium[7]	**$0.60**		
UF_6 VALUE[2]	**$44.75**/kg U as UF_6	6,990[2]	910[2]
US Premium	**$1.00**		
CONVERSION VALUE[3]	**$1.80**/lb U as UF_6	0	750
SWU VALUE[4]			
0.3 tails assay:	**$68**/SWU	265	111
LOAN RATE[5]	**3.5%**/annum	6,600	0

	$/lb. U_3O_8	Millions of Pounds	Number of Transactions	Number of Months
TRANSACTION VALUE[6]	**16.10**	**2.6**	**21**	**5**

[1]Supply and demand tables in the *Current Market Data* section of this Report detail the numbers for each category.
[2]For either uranium concentrates or uranium hexafluoride.

DEFINITIONS

1. The **Exchange Value** is Nuexco's judgment of the price at which transactions for significant quantities of natural uranium concentrates could be concluded as of the date indicated.
2. The **UF_6 Value** is Nuexco's judgment of the price at which spot and near-term transactions for significant quantities of natural uranium hexafluoride could be concluded as of the date indicated.
3. The **Conversion Value** is Nuexco's judgment of the price at which spot and near-term transactions for significant quantities of conversion services could be concluded in the secondary market as of the date indicated.
4. The **SWU Value** is Nuexco's judgment of the price at which spot and near-term transactions for significant quantities of enrichment services could be concluded as of the date indicated.
5. The **Loan Rate** is Nuexco's judgment of the annual interest rate at which uranium loans could be concluded as of the date indicated.
6. The **Transaction Value** is a weighted average price of recent natural uranium sales transactions. The calculation is based on prices paid in:
   a. Transactions closed within the previous three month period for which delivery is scheduled within one year of the transaction date;
   b. At least ten transactions;
   c. Transactions involving a sum total of at least 2 million pounds U_3O_8 equivalent.

   The sample time is extended as necessary to include these minima. Other currencies are converted to US dollars using conversion rates in effect on or near the transaction date.
7. The **US Premium** is Nuexco's judgment of the incremental price (relative to the Exchange Value or UF_6 Value, as applicable) at which transactions for significant quantities of natural uranium could be concluded as of the date indicated, if the buyer will accept only US-origin.

DERIVATIONS AND COMMENTS

1. All Market Values are based on:
   a. Data from recently completed transactions.
   b. Data from pending transactions.
   c. Firm bids to buy or borrow, and firm offers to sell or lend.
   d. Prices purchasers or rates borrowers have expressed a willingness to pay, but for which Nuexco is not aware of firm bids to buy or borrow, and prices sellers or rates lenders have expressed a willingness to accept, but for which Nuexco is not aware of firm offers to sell or lend.
2. Prices associated with deliveries under old or renegotiated contracts or other than arm's-length transactions are not included in the determination of these Market Values.
3. In the determination of prices, Nuexco does not consider transportation charges other than those customarily provided by suppliers .
4. The prices of services or materials delivered under long-term contracts with primary suppliers are not considered in the determination of the listed values.
5. For the SWU Value, Nuexco converts SWU prices at varying tails and product assays to equivalent SWU prices at a tails assay of 0.30 weight percent U_{235} and a product assay of 3.0 weight-percent U_{235}, assuming feed costs corresponding to the Nuexco Exchange and Conversion Values determined as of the same date.
6. In calculating the Transaction Value, Nuexco does not account for the price of uranium delivered in connection with contracts which call for "market price" mechanisms. This exclusion applies particularly to contracts in which delivery prices are expressed as a function of future Exchange Values or any other indeterminate variable. Also excluded from the calculation are any other transactions in which the delivery price is defined in such a way that it cannot currently be determined.

©NUEXCO 1988

NUEXCO

PRICING

NATURAL URANIUM AND SECONDARY MARKET CONVERSION

(All data as of May 31, 1988)

Overall market activity increased in May, and approximately 1.5 million pounds U_3O_8 equivalent changed hands. The SWU market was unusually active with two low-enriched uranium sales and one secondary market SWU sale. Three UF_6 and two conversion transactions are also reported. The U_3O_8 market was quiet, however, as only one transaction took place.

The **Exchange Value** is **$15.40** per pound U_3O_8, down $0.35 since last month, as offers by several non-US sellers at below-market prices failed to motivate buyers. Only one U_3O_8 transaction is reported this month, involving less than 300,000 pounds of US-origin material. At the end of the month a European utility was close to finalizing the sale of a medium-sized lot of concentrates. Demand for non-US concentrates remains highly discretionary. Sellers are having to discount prices substantially to generate buyer interest. In the USA, most market participants are deferring sales transactions in anticipation of an announcement this month of either a Supreme Court decision or an out-of-court settlement of the Producers' lawsuit.

The **US Premium** for U_3O_8 increased to **$0.60** this month, placing the Exchange Value plus the US Premium for U_3O_8 at the $16.00 level. For the past few months, the price of US-origin material has tended to stabilize around this $16.00 mark, indicating a fairly static price for US-origin material rather than an actual increase in its value. The sole U_3O_8 transaction occurring this month was priced near that level.

With firm demand now at a minimum, most natural uranium buyers and sellers, and particularly US sellers, are hesitant to make discretionary purchases or sales because of the various pending judicial and political events. The most interesting development this month was a new initiative undertaken by the Reagan Administration, Congress, and US producers to reach an omnibus settlement of several uranium industry issues. DOE, in conjunction with the US Producers, is drafting legislation to be attached to the Free Trade Agreement (FTA) implementing legislation that includes sections of the Uranium Revitalization, Tailings Reclamation and Enrichment Act (Title II - the establishment of a mill tailings fund, and Title III - the establishment of a private enrichment corporation). In addition, the legislation would repeal Section 161(v) of the Atomic Energy Act requiring DOE to restrict enrichment of foreign uranium, and it would provide for DOE to purchase as much as $750 million worth of US uranium beginning in 1989. (See page 4 for a summary of the proposed funding and distribution.) The draft legislation is expected to go to several committees for review, including the Senate Energy Committee. If Congress agrees, by mid-June the Administration could incorporate the new provision in the FTA implementing legislation.

If the above settlement is not reached soon, the Supreme Court's decision on the US Producers vs. DOE lawsuit will be the next important signal to the uranium industry regarding future demand and price for US uranium. That decision is expected to be announced sometime in June before the Court recesses.

* * *

Active supply of natural uranium (concentrates and UF_6) for spot delivery totals **6,990,000 pounds** U_3O_8 equivalent, up 1,390,000 pounds from last month. The corresponding figure for **active demand** is **910,000 pounds**, down 300,000 pounds. The spot and near-term **supply-demand ratio** is **7.8**, a substantial increase over last month's ratio of 4.8.

* * *

The **Transaction Value** is **$16.10** per pound U_3O_8, down $0.35 since last month. The calculation extends over a five-month period and includes 21 transactions involving 2.6 million pounds equivalent U_3O_8. To meet the required parameters of the Transaction Value, the transaction period has been extended to five months. (Last month, the transaction period was also five months.) Because this month's Transaction Value includes sales from January (when the Exchange Value was $16.30), its response to the declining Exchange Value has been delayed.

* * *

©NUEXCO 1988

The **UF_6 Value is $44.75** per kilogram U as UF_6, down $0.50 since April. Two buyers made purchases at prices below last month's UF_6 value of $45.25, and an additional UF_6 sale was made at a slightly higher price. One of the transactions involved US-origin UF_6.

The **US Premium** for **UF_6** increased to $1.00 this month. As in the case for the U_3O_8 premium, this higher premium indicates that the price for US-origin UF_6 has somewhat stabilized, pending the possible resolution of the current legal controversy surrounding the US uranium industry, and is not weakening along with the non-US UF_6 price right now. Demand for UF_6 of any origin remains thin, and only one utility is known to be actively seeking UF_6 (or possibly U_3O_8) on the spot market.

Two enriched uranium product (EUP) sales were concluded this month, one of which involved a US utility; the other, a non-US utility. Both sales involved low feed prices and thus contributed to the downward pressure on the UF_6 Value this month.

Over the past few years, the market for EUP has grown significantly. Because of the inverse relationship between feed and SWU prices when combined as EUP, it is difficult to accurately report individual prices for UF_6 and SWU in EUP transactions. Either the feed or SWU price, however, can be determined if the EUP price, the enrichment and tails assays, and one of the component prices are known.

* * *

The **Loan Rate** is unchanged from last month at **3.5** percent per annum. Some activity has occurred recently in the loan market, but no transactions met the arms-length criterion for reporting this month.

* * *

The **Conversion Value** remained at **$1.80** per pound U as UF_6 for the fourth consecutive month. The two secondary conversion transactions of the month were concluded at or near the current Conversion Value. One calls for 1988 delivery; the other specifies delivery in early 1989.

* * *

ENRICHMENT SERVICES AND SWU

The **SWU Value** remained at **$68** during an unusually active month. One secondary market SWU sale is reported involving non-DOE SWU priced slightly below market. One significant sale of non-Soviet enriched uranium product (EUP) was believed to include a price for the SWU component at or near the current SWU Value. One other EUP sale involved DOE marketing a customer's excess SWU and was priced at a premium above market.

The SWU market continues to be characterized by a wide variation of prices, dependent primarily on origin, but also on timing and enrichment assays. Soviet-origin SWU are generally available at a discount off the SWU Value, whereas DOE-origin SWU command a premium.

* * *

©NUEXCO 1988

NUEXCO

PRICING

PROPOSED AGREEMENT BETWEEN DOE AND THE US PRODUCERS

The agreement between DOE and the US Producers currently being drafted for consideration by Congress provides for the establishment of a $1.75 million fund of which $750 million would be used to purchase uranium from US producers, and $1 billion would be allocated for mill tailings reclamation.

Proposed Contributions to the Fund

Participant	Total Amount	Fees
Utilities with nuclear power plants	$1 billion	Constant fee (currently estimated as $72) per kg uranium loaded into reactors from 1988-1993. Payments may begin in 1989.
US producers	$300 million	$2 million per mill site $1 per dry ton of tailings
New enrichment corporation	$450 million	$90 million per year starting in 1989

Proposed Fund Distribution

Year	Amount
1st year	$160 million
2nd year	$150 million
3rd year	$140 million
4th year	$130 million
5th year	$120 million

Under the plan, DOE would purchase uranium mined and milled in the USA, possibly beginning as early as 1989. There is also discussion of special incentives for small producers (i.e., preferential treatment under the program).

©NUEXCO 1988

EXCHANGE VALUE EXPRESSED IN SELECTED PRODUCER & CONSUMER CURRENCIES[1]

Country (currency)	per lb. U_3O_8 as Concentrates			per kg U as Concentrates		
	This Month (May 31, 1988)	Last Month (Apr 30, 1988)	12 Months Ago (May 31, 1987)	This Month (May 31, 1988)	Last Month (Apr 30, 1988)	12 Months Ago (May 31, 1987)
Australia (dollar)	19.07	20.76	23.84	49.58	53.98	61.97
Belgium (comm. franc)	550.00	550.12	640.30	1,430	1,430	1,665
Canada (dollar)	19.07	19.37	22.84	49.59	50.36	59.37
EEC (ecu)	12.65	12.68	14.90	32.89	32.97	38.75
Finland (markka)	62.30	62.82	74.79	161.96	163.33	194.44
France (franc)	88.91	89.29	102.97	231.16	232.12	267.69
FRG (mark)	26.44	26.29	30.82	68.74	68.34	80.12
Italy (lira)	19,605	19,529	22,269	50,970	50,771	57,894
Japan (yen)	1,904	1,961	2,433	4,949	5,098	6,326
Netherlands (guilder)	29.58	29.48	34.76	76.90	76.64	90.36
South Africa (rand)	34.34	33.83	34.34	89.27	87.96	89.29
Spain (peseta)	1,742	1,737	2,151	4,529	4,516	5,591
Sweden (krona)	91.45	92.27	107.59	237.75	239.87	279.72
Switzerland (franc)	22.10	21.79	25.55	57.45	56.65	66.43
UK (pound)	8.29	8.40	10.43	21.56	21.84	27.11
US (dollar)	15.40	15.75	17.00	40.04	40.95	44.20

TRANSACTION VALUE EXPRESSED IN SELECTED PRODUCER & CONSUMER CURRENCIES[1]

Country (currency)	per lb. U_3O_8 as Concentrates			per kg U as Concentrates		
	This Month (May 31, 1988)	Last Month (Apr 30, 1988)	12 Months Ago (May 31, 1987)	This Month (May 31, 1988)	Last Month (Apr 30, 1988)	12 Months Ago (May 31, 1987)
Australia (dollar)	19.94	21.69	24.12	51.83	56.38	67.70
Belgium (comm. franc)	575.00	574.57	647.83	1,495	1,494	1,684
Canada (dollar)	19.94	20.23	23.11	51.84	52.60	60.07
EEC (ecu)	13.23	13.25	15.08	34.39	34.44	39.20
Finland (markka)	65.13	65.62	75.67	169.32	170.59	196.73
France (franc)	92.96	93.25	104.18	241.66	242.44	270.84
FRG (mark)	27.64	27.45	31.18	71.87	71.37	81.07
Italy (lira)	20,497	20,397	22,531	53,286	53,027	58,575
Japan (yen)	1,990	2,048	2,462	5,174	5,324	6,401
Netherlands (guilder)	30.93	30.79	35.17	80.40	80.04	91.43
South Africa (rand)	35.90	35.34	34.75	93.33	91.87	90.34
Spain (peseta)	1,821	1,814	2,176	4,735	4,717	5,657
Sweden (krona)	95.61	96.37	108.86	248.55	250.53	283.01
Switzerland (franc)	23.10	22.76	25.85	60.06	59.17	67.21
UK (pound)	8.67	8.77	10.55	22.54	22.18	27.43
US (dollar)	16.10	16.45	17.20	41.86	42.77	44.72

[1]Calculated using currency exchange rates published in the *Wall Street Journal* on the last working day of the month.

©NUEXCO 1988

NUEXCO

CURRENT MARKET DATA

CONVERSION VALUE EXPRESSED IN SELECTED PRODUCER & CONSUMER CURRENCIES[1]

Country (currency)	per lb U as UF_6			per kg U as UF_6		
	This Month (May 31, 1988)	Last Month (Apr 30, 1988)	12 Months Ago (May 31, 1987)	This Month (May 31, 1988)	Last Month (Apr 30, 1988)	12 Months Ago (May 31, 1987)
Australia (dollar)	2.23	2.37	2.52	4.91	5.23	5.56
Belgium (comm. franc)	64.29	62.87	67.80	141.73	138.61	149.47
Canada (dollar)	2.23	2.21	2.42	4.91	4.88	5.33
EEC (ecu)	1.48	1.45	1.58	3.26	3.20	3.48
Finland (markka)	7.28	7.18	7.92	16.05	15.83	17.46
France (franc)	10.39	10.20	10.90	22.91	22.50	24.04
FRG (mark)	3.09	3.00	3.26	6.81	6.62	7.19
Italy (lira)	2,292	2,232	2,358	5,052	4,920	5,198
Japan (yen)	222.50	224.10	257.66	490.52	494.06	568.04
Netherlands (guilder)	3.46	3.37	3.68	7.52	7.43	8.11
South Africa (rand)	4.01	3.87	3.64	8.85	8.52	8.02
Spain (peseta)	203.62	198.54	227.70	448.90	437.71	502.00
Sweden (krona)	10.69	10.54	11.39	23.56	23.25	25.12
Switzerland (franc)	2.58	2.49	2.71	5.69	5.49	5.96
UK (pound)	.97	.96	1.10	2.14	2.12	2.43
US (dollar)	1.80	1.80	1.80	3.97	3.97	3.97

SWU VALUE AND UF_6 VALUE EXPRESSED IN SELECTED PRODUCER & CONSUMER CURRENCIES[1]

	SWU Value at 0.30% Tails Assay This Month (May 31, 1988)	SWU Value at 0.30% Tails Assay Last Month (Apr 30, 1988)	UF_6 Value per kg U as UF_6 This Month (May 31, 1988)	UF_6 Value per kg U as UF_6 Last Month (Apr 30, 1988)
Australia (dollar)	84.21	89.65	55.41	59.65
Belgium (comm. franc)	2,429	2,375	1,598	1,581
Canada (dollar)	84.22	83.64	55.42	55.65
EEC (ecu)	55.87	54.76	36.76	36.43
Finland (markka)	275.08	271.24	181.02	180.49
France (franc)	392.61	385.49	258.37	256.51
FRG (mark)	116.76	113.48	76.83	75.51
Italy (lira)	86,569	84,315	56,970	56,107
Japan (yen)	8,405	8,466	5,532	5,634
Netherlands (guilder)	130.62	127.27	85.95	84.69
South Africa (rand)	151.62	146.08	99.77	97.20
Spain (peseta)	7,692	7,501	5,062	4,991
Sweden (krona)	403.80	398.36	265.73	265.08
Switzerland (franc)	97.57	94.08	64.21	62.60
UK (pound)	36.62	36.27	24.10	24.13
US (dollar)	68.00	68.00	44.75	45.25

[1]Calculated using currency exchange rates published in the *Wall Street Journal* on the last working day of the month.

©NUEXCO 1988

RECENT TRANSACTIONS[1]

Uranium Sales

Nuexco Transaction Number	Delivery Period	Approximate Quantity (thousands of pounds, U_3O_8 equivalent)	Approximate Price Range as Percent of Current Exchange or UF_6 Value[2]	Seller	Buyer	Remarks
4297	1988	301-600	98-102	Producer	Utility	UF_6
4300A	1988	601-1,000	R[3]	Intermediary	Utility	Contained in LEU
4303A	1988	101-300	R[3]	Intermediary	Intermediary	Contained in LEU
4306	1988	less than 50	98-102	Intermediary	Intermediary	US Origin UF_6
4314	1988	101-300	98-102	Intermediary	Utility	UF_6
4315	1988	101--300	98-102	Intermediary	Utility	US-Origin

Conversion Services Secondary Market Sales

Nuexco Transaction Number	Delivery Period	Approximate Quantity (thousands of pounds, U equivalent)	Approximate Price Range as Percent of Current C.V.	Seller	Buyer	Remarks
4299	1988	101 - 300	98-102	Utility	R[3]	
4310	1989	101-300	103-107	Intermediary	U[illegible]y	

[1] Transactions listed are not limited to those in which Nuexco was involved, but also include others of which Nuexco is aware.
[2] Where US-origin material is involved, the range is based on the Exchange Value (or UF_6 Value) *plus* the premium (relative to the Exchange Value or UF_6 Value). The range reflects five percentage points (inclusive) per grouping, centered about the middle of the range.
[3] The notation R means that Nuexco either does not know, or that Nuexco has restricted that information to protect client or source confidentiality.

©NUEXCO 1988

NUEXCO

CURRENT MARKET DATA

Enrichment Services
Secondary Market Sales

Nuexco Transaction Number	Delivery Period	Approximate Quantity[4] (thousands of SWU)	Approximate Price Range as Percent of Current SWU Value[5]	Seller	Buyer	SWU Origin	Remarks
4300B	1988	101-300	R[3]	Intermediary	Utility	R[3]	Cont. in LEU
4303B	1988	less than 50	R[3]	Intermediary	Utility	DOE	Cont. in LEU
4312	1989	50-100	R[3]	Intermediary	Utility	R[3]	

[1]Transactions listed are not limited to those in which Nuexco was involved, but also include others of which Nuexco is aware.
[2] Where US-origin material is involved, the range is based on the Exchange Value (or UF6 Value) *plus* the premium (relative to the Exchange Value or UF6 Value). The range reflects five percentage points (inclusive) per grouping, centered about the middle of the range.
[3]The notation R means that Nuexco either does not know, or that Nuexco has restricted that information to protect client or source confidentiality.
[4]If tails assay is unknown or unspecified, Nuexco's calculation of SWU quantity assumes 0.30 w/o tails assay.
[5]Prices are usually normalized to 0.30% tails assay. Refers to SWU Value that corresponds to SWUs included in transaction. When prices and SWU values are expressed as discounts from a reference price (e.g., X dollars less than DOE's USEC base price at time of delivery), the percentage price range is based on the discounted prices, not on the reference price.

©NUEXCO 1988

URANIUM SUPPLY
(May 31, 1988)

Nuexco Project Number	Delivery Period[1] (Thousands of Pounds U_3O_8) Spot or Near-term[2]	Intermediate or Long-term	Remarks
Available for Sale			
ACTIVE			
87-1002	270	—	
87-1023	500	500 per year	1988-90
87-1061	1,000	700 per year	1988-91
87-1123	1,000	1,000 per year	
87-1130A*	300	—	1988
87-1141	500	200 per year	1989-92
87-1161	1,000	1,000 per year	UF_6
88-1000A*	80	—	1988
88-1000B*	60	—	1988, UF_6
88-1001	200	200 per year	1988-91
88-1026	250	—	1988
88-1033A	130	—	1988, UF_6
88-1036	100	—	1988
88-1064*	400	400 per year	1988-90
88-1078*	1,200	—	1988
87-1001	—	500 per year	1989 on
87-1005	—	250 per year	1988-95
Total	**6,990**		
INACTIVE			
87-1019	1,000	1,000 per year	1988-91
87-1053	100	400 per year	1989 on
87-1159	60	—	
88-1041*	680	—	UF_6
88-1086*	75	—	1988
87-1130B*	—	480	1989
Total:	**1,915**		

*New or revised since last month
[1]Measured from the date of this Report.
[2]For delivery within one year. This category excludes material deliverable within one year under other than spot or near-term contracts.
Projects removed since last month: 87-1135, 87-1136, 87-1152.

© NUEXCO 1988

NUEXCO

CURRENT MARKET DATA

URANIUM DEMAND
(May 31, 1988)

Nuexco Project Number	Delivery Period[1] (Thousands of Pounds U_3O_8) Spot or Near-term[2]	Intermediate or Long-term	Remarks
Inquiries to Purchase:			
ACTIVE			
88-1035A	40	—	1988, UF_6e
88-1060	300	—	1988, U_3O_8/UF_6
87-1069	50	—	1988
88-1075A*	20	—	1988, UF_6e
88-1084*	500	—	1988
87-1013	—	1,200 per year	1990-95
87-1021	—	200 per year	1992 99
87-1134	—	260	1989
87-1172	—	500 per year	1990 on
88-1044	—	2,400	1991-95
88-1056	—	500 per year	1989-93, U_3O_8 or UF_6
88-1062	—	200 per year	1990-on
88-1080*	—	150	1991
Total:	**910**		
INACTIVE			
87-1154A	80	—	1988, UF_6e
88-1014	190	—	1988
88-1083*	800	—	1988
87-1163	—	160	1989-93
87-1166	—	650	1989, UF_6
Total:	**1,070**		

*New or revised since last month.
[1]Measured from the date of this Report.
[2]For delivery within one year. This category excludes material deliverable within one year under other than spot or near-term contracts.
Projects removed since last month: 88-1045, 88-1072.

©NUEXCO 1988

LOAN SUPPLY AND DEMAND
(May 31, 1988)

Nuexco Project Number	Delivery Period[1] (Thousands of Pounds U_3O_8) Within 1 Year	Beyond 1 Year	Remarks
Available for Loan:			
ACTIVE			
87-1012*	1,000	—	
87-1071	1,000	—	UF_6
87-1157	4,000	—	
88-1057*	600	—	
Total:	**6,600**		
INACTIVE			
87-1031	1,000	—	
87-1033	1,000	—	
Total:	**2,000**		

*New or revised since last month.
[1]Measured from the date of this Report.
Projects removed since last month:

© NUEXCO 1988

NUEXCO

CURRENT MARKET DATA

CONVERSION SUPPLY AND DEMAND
(May 31, 1988)

Nuexco Project Number	Delivery Period[1] (Thousands of Pounds U as UF_6) Within 3 Years	Beyond 3 Years	Remarks
Available for Sale			
INACTIVE			
87-1008*	770	475	1988
Total:	**770**		
Inquiries to Purchase			
ACTIVE			
88-1034*	750	—	1990
Total:	**750**		
INACTIVE			
88-1021	65	—	
Total:	**65**		

*New or revised since last month.
[1]Measured from the date of this Report.
Projects removed since last month: 88-1059.

© NUEXCO 1988

SWU SUPPLY AND DEMAND
(May 31, 1988)

Nuexco Project Number	Delivery Period[1] (Thousands of SWU) Spot or Near-term[2]	Intermediate or Long-term	Remarks
Available for Sale			
ACTIVE			
87-1058*	50	—	1988
87-1068	200	—	1988,UF6e
88-1033B	15	—	1988,UF6e
Total	**265**		
INACTIVE			
87-1004	55	—	1988
87-1128	360	—	1988
88-1082*	25	—	1988
Total:	**440**		
Inquiries to Purchase			
ACTIVE			
88-1035B	20	—	1988, UF6e
88-1074	80	—	1988
88-1075B*	11	—	1988, UF6e
88-1077*	—	70	1989-91
Total:	**111**		
INACTIVE			
87-1154B	20	—	1988, UF6e
Total:	**20**		

*New or revised since last month.
[1]Measured from the date of this Report.
[2] For delivery within one year. This category excludes SWU deliverable within one year under other than spot or near-term contracts.
Projects removed since last month: 88-1058.

©NUEXCO 1988

NUEXCO

RECENT DEVELOPMENTS

AUSTRALIA

Australian Labor Party Unlikely to Debate Three-Mine Policy at Upcoming Conference

As the Australian Labor Party (ALP) prepares for its biennial conference, uranium has again appeared as a national issue, gaining extensive media attention and creating considerable tension within the ALP. One observer of the Australian uranium scene noted that "the resurgence of the 'Great Uranium Debate' has been spurred by the mining lobby and the wide distribution of two uranium market reports: a Nuexco study commissioned by Pancontinental Mining and a report prepared by the University of Melbourne's Institute of Applied Economic and Social Research"- both of which indicate that there is a substantial market for Australian uranium in the 1990s. The latest champions of additional uranium development are the traditional (Aboriginal) owners of the Koongarra leases who have been pressing for early exploitation of the Denison project, in which they have a 25 percent equity interest.

Efforts by sections of the Center-Left and Right factions of the ALP to have the three-mine policy debated at the conference appear to have failed due to lack of support and fears that a re-opening of the debate could lead to greatly increased friction within the Party. The ALP already must contend with a number of other difficult and potentially divisive political issues including privatization, wages policy, and tertiary education. Prime Minister Bob Hawke, a pragmatist who is at least intellectually pro-nuclear, has generally managed to stay out of the debate, allowing it to focus on the responsible Minister, John Kerin, who has continued to support the current three-mine policy.

While the mining lobby's campaign and the two reports mentioned above have created new support within ALP ranks for a more liberal uranium development policy, the hard core opposition of the ALP's Left has not been swayed. Unless and until the present restrictive policies are changed, approvals for new uranium mine development may have to wait for at least two more years. These restrictions will prevent Australia, with over 30 percent of the Western World's low-cost uranium resources, from achieving its proportionate share of the large, uncommitted uranium market now forecast for the 1990s.

* * *

FEDERAL REPUBLIC OF GERMANY

New Government in Schleswig-Holstein Pledges to Shut Down Three Nuclear Plants

After 38 consecutive years in power, the conservative Christian Democratic Union (CDU) and centrist Free Democrats (FDP), lost their combined majority in the state government of Schleswig-Holstein to the Social Democratic Party (SPD) on May 8, 1988. The SPD, which won 54.5 percent of the vote, campaigned on a platform that includes the complete phase-out of nuclear power in the state. Currently, three nuclear plants are operating in Schleswig-Holstein: Brunsbüttel (771-MW BWR), Krümmel (1260-MW BWR), and Brokdorf (1307-MW PWR). All three are jointly owned by PreußenElektra AG (PREAG) and Hamburgische Electricitätswerke AG (HEW). Together the three plants provide about 75 percent of the state's electricity, the highest percentage in any state of the Federal Republic of Germany. Cost estimates for near-term shutdown approach DM 117 billion (approximately US $68 billion), which include lost investment and energy replacement by new coal plants.

The new socialist energy minister Mr. Guenther Jansen has announced plans to appoint experts to review the safety of plant operations, to study long-term waste storage, and to evaluate alternative energy sources. In early June the SPD is expected to announce the specific procedure for implementing its energy policy. The plants' owners have pledged to take any shutdown order to the federal supreme court in Bonn. The CDU, in coalition with the FDP and the Christian Social Union (CSU), currently has a majority in the federal parliament.

While the SPD's anti-nuclear rhetoric has been pronounced, the policy to be implemented could be less drastic now that the party must govern and choose a course for the state's economy.

* * *

FRANCE

Release of French Hostages in Iran May be Tied to Partial Eurodif Loan Repayment

The French newspaper *Le Monde* (May 7, 1988) reported that the recent liberation of three French citizens held

©NUEXCO 1988

hostage by Islamic terrorists may have been connected to a settlement of the complex dispute between France and Iran over nuclear energy projects. The main projects in dispute are Iran's investment in Eurodif, via the French CEA (Commissariat a l'Energie Atomique), whose resposibilities in this matter are suceeded by Cogema, and Iran's order for two PWR reactors from Framatome, the French reactor vendor. Iran reneged on its commitments to the two projects following the accession to power of the Ayatollah Khomeini's government in 1979.

In 1974, the Iranian government of Shah Reza Pahlavi extended an eight-year loan of one billion US dollars to the CEA to help finance construction of the Eurodif enrichment plant at Tricastin, France. In return, Iran became a net ten-percent shareholder in Eurodif through a joint venture with CEA known as Sofidif (Table 1), with the obligation to take and pay for a corresponding share of Eurodif's SWU production beginning in the early 1980s. Following the overthrow of the Shah in 1979, the new government renounced nuclear energy and the Shah's commitments to the French nuclear industry. The French called for arbitration to recover damages, claiming nine billion French francs for the default on Eurodif and five billion French francs owed to Framatome for default on the power plant order. Pending resolution of the dispute, the CEA rescheduled payment of principal on the Eurodif loan until 1992, a ten-year delay, and began paying interest to a blocked account.

While no formal judgment has been announced in the case nor any resolution of the dispute agreed upon publicly, the French government of the conservative Prime Minister Jacques Chirac apparently did pay Iran one-third of the principal on the Eurodif loan (US $330 million) in 1986 as a gesture of accommodation. In November 1987 when two French hostages held in Beirut were released, speculation arose in the western press regarding a second payment of one-third of the principal by France; the French government never confirmed the alleged payment. The release in May 1988 of the last three French hostages held in Beirut, also orchestrated by the Chirac government, has led to the inevitable presumption of a third and final payment of the principal. According to *Le Monde*, if the payments actually took place, they must have come from the French Treasury since funds from the blocked Eurodif loan account were legally inaccessible.

Table 1
OWNERSHIP OF EURODIF S.A.

Company	Country	Percent Share
Cogema[1]	France	36.528
Sofidif[2]	France/Iran	25.000
Synatom[3]	Belgium	11.111
Enusa[4]	Spain	11.111
ENEA[5]	Italy	8.125
Agip SpA	Italy	8.125
Total		100.000

[1] Cogema = Compagnie Générale des Matières Nucléaires (owned 100 percent by the French CEA)
[2] Sofidif = Société Franco-Iranienne pour l'Enrichissement de l'Uranium par Diffusion Gazeuse (owned 60 percent by Cogema and 40 percent by the Atomic Energy Agency of Iran)
[3] Synatom = Société Belge des Combustibles Nucléaires Synatome S.A.
[4] ENUSA = Empresa Naçional del Uranio SA
[5] ENEA = Comitato Nazionale per la Ricerca e per lo Sviluppo dell'Energia Nucleare e delle Energie Alternative

* * *

JAPAN

Prototype Enrichment Plant Begins Operation

On April 25, Japan's Power Reactor and Nuclear Fuel Development Corporation (PNC) began operation of its prototype centrifuge enrichment plant at Ningyo Toge, Okayama. Known as DOP-1, this unit has a 100,000 SWU-per-year capacity. An additional unit for the prototype plant is planned for start-up in 1989.

Construction of the prototype plant began in November 1985. Costs for completion of the 15,000 square meter enrichment facility reached approximately 56 billion yen (US $448 million), eleven billion yen less than its original

© NUEXCO 1988

estimates due in part to improved performance of centrifuge and peripheral equipment. The utility industry and government financed approximately 50 percent of the cost, while loans provided the remaining funding. The technology developed from this prototype plant will be used on a commercial scale upon completion of the plant at Rokkasho Muro, Amori Prefecture, scheduled to begin operation in 1991. Phase One of the commercial program calls for construction of a 600,000 SWU-per-year enrichment plant, with an additional 900,000 SWU capacity to be added in 100,000 SWU increments over ten years in Phase Two. Capacity of the plant will ultimately reach 1.5 million SWU per year, and it will supply more than twenty percent of Japan's enrichment requirements. This facility will be owned and operated by Japan Nuclear Fuel Industries (JNFI), which was organized in 1985 by a consortium of all the Japanese electric utilities and other nuclear energy companies.

Completely dependent on enriched uranium imports (approximately 90 percent from the USA; ten percent from France), Japan has invested over 130 billion yen (US $1.04 billion) in centrifuge separation research and development. PNC chose the centrifuge separation method because of its lower energy consumption compared to the gas diffusion method. In addition, the centrifuge technology is more easily adaptable to small-scale operations because centrifuge separators can be added modularly. PNC first used centrifugal separation in a pilot plant which began operating in 1979 as part of a ten-year program. The domestically-enriched uranium will be used for Japanese light water reactors, although probably no sooner than 1989. Ten utilities, including Japan Atomic Power Co. (JAPC), will purchase a small amount of their enrichment requirements from DOP-1. The unit only has the production capacity to provide a 1,000 MWe reactor with fuel for approximately ten months.

PNC's timing for the enrichment facility's commercial start-up, however, does not coincide with the most favorable economic conditions, as the rapidly rising yen has caused the domestic enrichment program's costs to soar above those of the established foreign enrichers. Whereas PNC's enrichment cost at DOP-1 is slightly above 20,000 yen (US $159) per SWU, DOE is offering enrichment services under its most prevalent contract at 14,600 yen (US $117) per SWU. PNC has not yet established its SWU offering price to Japanese utilities. At present, it does not appear likely that PNC will offer enrichment services to non-Japanese customers.

To help reduce the large cost differential between domestic and foreign enrichment sources, PNC and JNFI are developing a new type of centrifugal separator with greater rotation capabilities, which is expected to improve cost efficiency by more than twenty percent. The separator will be introduced in the second phase of JNFI's commercial plant program.

Other Enrichment Research and Development

Japan is also aggressively pursuing research and development in other enrichment methods, although only the centrifuge process is commercially available at this time. In 1987, nine commercial utilities, three Japanese industrial companies (Mitsubishi, Hitachi and Toshiba), the Japan Atomic Power Co., and the Central Research Institute of the Electric Power Industry formed the LASER-J association to research and develop atomic laser isotope separation (AVLIS) enrichment technology. The government and utilities provide approximately half of the $65 million annual funding (over four years), while the three major industrial members fund the other 50 percent. In addition, the Science and Technology Administration allocated $740 million yen (US $592 million) to the Japan Atomic Energy Research Institute (JAERI) for basic AVLIS research. JAERI passes on some of its findings to Mitsubishi, Hitachi and Toshiba who each have specific areas of research under the LASER-J association. Other enrichment technologies currently under study in Japan include chemical separation, molecular laser isotope separation (MLIS), and ion exchange.

The chemical separation process, although second in technical maturity, still needs a few years to confirm its reliability. The AVLIS and MLIS technologies are at least ten years away from being commercially feasible. In the meantime, Japan's domestic enrichment program will continue to face uncertainties regarding its competitiveness in the international enrichment market, and may have to rely on utilities or on government subsidies to provide some financial relief in order to develop a fully indigenous nuclear fuel cycle.

* * *

© NUEXCO 1988

UNITED STATES

Agreement Reached to Close Shoreham

Long Island Lighting Company (LILCO) and the State of New York reached agreement in principle on May 26, 1988 to settle a long-standing dispute over the fate of the Shoreham nuclear power plant. The State will buy the $5.3 billion nuclear plant for $1, decommission and dismantle it, and allow LILCO to raise its electricity rates by five percent annually for at least three years and possibly as many as ten years. The State will also allow LILCO to earn a thirteen percent return on equity, including most of its investment in Shoreham. Shoreham will be the second substantially completed US nuclear plant to be permanently shut down before entering full commercial operation. Cincinnati Gas & Electric Company's 97 percent-completed Zimmer plant was the first premature closure, shut down in 1983.

Shoreham received approval in 1970 for construction and first filed for licensing approval in 1975. Licensing hearings began in 1982 and have resulted in legal costs surpassing $25 million. State and local officials have argued that Shoreham should be closed since it would be impossible to evacuate Long Island residents in the event of an accident, and New York Governor Mario Cuomo has refused to allow State officials to participate in Nuclear Regulatory Commission (NRC)-mandated plant-evacuation drills. In October 1987, the NRC changed its ruling that required state officials to participate in plant evacuation drills. The new ruling allowed the substitution of plant personnel for state personnel during drills, and was based on the "realism" argument, i.e., that during actual emergencies state and local officials would act to protect the public. LILCO conducted a full drill in February 1988 using its personnel, but the NRC found the plan faulty and denied the Shoreham plant a full operating license.

Governor Cuomo also attempted to thwart Shoreham's start-up by creating the state agency Long Island Power Authority (LIPA) in 1986. The New York legislature authorized LIPA to take over LILCO if the takeover would result in lower electricity rates. The investment banking firm of Lazard Freres released a study showing a twelve percent rate savings to investors over fifteen years if LIPA took over the utility, while LILCO's in-house and independent consultant studies projected a conflicting outcome, with government ownership causing rate increases of six to ten percent. On March 29, 1988, LIPA made an offer of $745 million (less than current book value) to buy out LILCO, but LILCO did not respond to this offer by the April 15, 1988 deadline.

The May 26th agreement, which only provides for the purchase of Shoreham rather than the previously-proposed public ownership of LILCO, will be a less expensive way to shut down Shoreham, according to Governor Cuomo. LILCO's customers, now paying the third highest electric rates in the USA, will nevertheless bear the brunt of Shoreham's shutdown and replacement cost. Moreover, according to US Secretary of Energy John Herrington, Long Island residents may experience brownouts through the next few years as demand during peak times exceeds load capacity. Nevertheless, the agreement is expected to be ratified by LILCO shareholders, the New York Public Service Commission (PSC), the New York legislature, and the NRC. Cuomo has requested the PSC and the state legislature to approve the deal within 90 days.

It is too early to tell how Shoreham's closure will affect the neighboring Seabrook nuclear plant in New Hampshire, another completed but unlicensed plant whose public officials have opposed its emergency evacuation plan. While Seabrook's opponents may attempt to find a precedent in Shoreham, the enormous expense of scrapping Shoreham may dissuade the New England public from favoring the closure of another nuclear plant. The potential shut-down costs of Seabrook are also estimated to be much higher than Shoreham, because electricity rates would have to be significantly raised to cover the owners' investment in the plant, none of which has yet been recouped. The financial situation of Seabrook's principal owner, Public Service Company of New Hampshire (PSNH), further complicates the matter; PSNH filed for bankruptcy under Chapter 11 in January because it was unable to make interest payments on Seabrook-related debt. Another partial owner (11.6 percent), Massachusetts Municipal Wholesale Electric Co., announced it was putting its interest up for sale, and has stopped paying its share of the plant's maintenance expense (approximately $1.2 million per month). The start-up of Seabrook, however, does have the support of New Hampshire Governor John Sununu, which may have a significant effect on its future.

* * *

© NUEXCO 1988

NUEXCO

ANALYSIS AND COMMENTARY

TRENDS IN NATURAL URANIUM CONTRACTING

The following article is based on selected portions of Nuexco's comprehensive study entitled "Contracting for Uranium: An Analysis of Trends in Terms and Conditions". The study documents and analyzes historical trends and current practices in natural uranium contracting (concentrates and UF6), reviews and analyzes purchasing strategies of the various countries, and provides recommendations on terms and conditions for new contracts and for the possible renegotiation of existing contracts.

* * *

Natural uranium contracting practices have undergone a significant transformation since the late 1970s, largely due to the shift from a seller's market to a buyer's market. The turnabout resulted primarily from the inadvertent buildup of high inventory levels in the late 1970s due to widespread reactor cancellations, the substantial decline in projections of uranium demand, and the resultant excess supply capability of uranium producers. The precipitous price decline, from $43.40 per pound U_3O_8 in mid-1978 to $17.00 in August 1982, with interim fluctuations, created a very different environment for purchasers, who now have strongly competing supply sources from which to choose and who can consequently benefit from more favorable contract provisions being offered.

Although there are many common trends in natural uranium contracting, there remains a great disparity among regional preferences for certain terms, particularly regarding flexibility in pricing and delivery terms. This article presents some of Nuexco's findings on the evolution of long-term uranium procurement and supply, based on uranium transaction records for the period 1980-1987. The study focuses on arms-length natural uranium transactions (concentrates or UF_6) involving term contracts.

Pricing and Price Mechanisms

One of the most variable and evolving contract provisions concerns price structure. The three most prevalent types are:

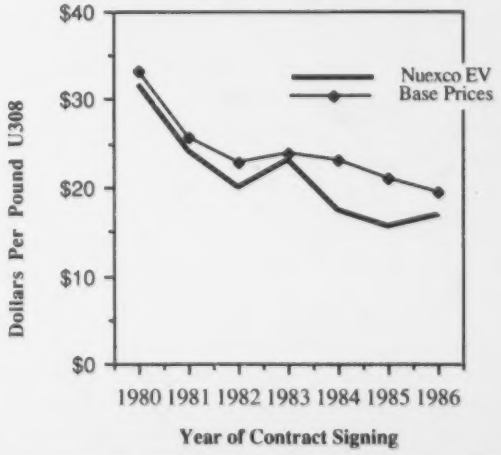
1. Defined Price
2. Market-Related Price
3. Negotiated Price

Defined Pricing

A "defined price" is one that both parties agree upon at contract execution. It may be a fixed price, in which case the price would incorporate the seller's implicit estimate of the future effects of inflation and market activity, or it may be a base price which is to be adjusted for inflation using a specified formula and indexes. Non-US buyers tend to use defined pricing in term contracts almost twice as often as do US buyers.

The concept of a base price subject to escalation arose in the early years of the nuclear industry as a means of compensating for the effects of inflation. Although the intent of the escalation clause generally is to protect the seller when production costs are rapidly rising, the escalation factor would benefit the buyer if the general monetary inflation rate exceeded the escalation rate, or would benefit the seller if the escalation rate exceeded the inflation rate. A common escalation method in the USA is based on the Gross National Product Implicit Price Deflator (GNP IPD). Other types of escalation factors are tied to specific industry wage standards, and sometimes a combination of several different indexes is used.

Figure 1
BASE PRICES IN LONG-TERM CONTRACTS AND SPOT PRICES



© NUEXCO 1988

An interesting observation from the NUEXCO database is that base prices in new long-term contracts have tended to trend with the spot price prevailing at the time of contract signing. As shown in Figure 1, base prices have fallen along with spot prices since 1980.

Market-Related Pricing

The "market-related" pricing mechanisms vary, but generally take one or more of the following forms:

- market price
- market price less fixed discount
- market price less discount that depends on market price
- market price with floor
- market price with ceiling
- market price with floor and ceiling

Sometimes one of these mechanisms is combined with a provision that allows one or the other party to terminate all or a portion of the contract if the contract price exceeds pre-defined limits. This concept, known as the "walkaway" provision, effectively permits renegotiation of the contract at certain pricing trigger points.

1. The straight "market price" is based on some predetermined market price indicator, frequently the Nuexco Exchange Value or combinations of it and other indicators, and generally prevails in short or medium-term transactions.

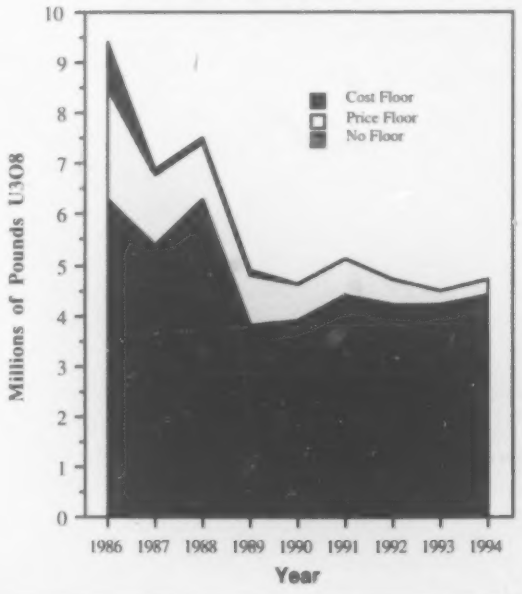
2. The "market price less discount" was the second most popular pricing mechanism in the sampling, and has been used more frequently in recent years. In a typical example of this mechanism, the contract provides for a one to five percent discount from the current market price in the delivery month, with market price defined as the most recently published Nuexco Exchange Value or some other indicator.

3. An example of the "market price less discount depending on market price would be a discount of one percent per five dollar increment by which the market price exceeds an established base price plus adjustment. So, if the Nuexco Exchange Value were $21.00 and the base price plus adjustment were $16.00, the discount would be $.21 and the resulting amount payable would total $20.79. Another example is the concept of increasing discounts from market price as market price exceeds certain thresholds.

4. The "market price with floor" often makes use of a defined price such as the base-plus-adjustment methodology for the floor. Under this mechanism, the price might be the higher of the current market price (such as the Nuexco Exchange Value) or a base price escalated to the month of delivery. This concept is generally called market price with floor because, if the market price drops to a certain level, the adjusted base price acts as the minimum price allowable under the contract. This pricing mechanism protects the seller from having to sell at below its cost when the market is weak. Because sellers were favorably positioned in the 1970s, the use of floor price provisions was almost universal. By 1987, however, as the market shifted from seller to buyer dominance, floor prices became less prevalent .

Figure 2 illustrates the floor price data for US contracts, based on information compiled by the US Energy Information Administration in its annual uranium surveys. The upper-most area of the graph shows the "market price with cost floor" concept, a relatively infrequent provision, where the floor price is based directly on the seller's production cost. These data are taken from contracts that were in existence as of December 31, 1986, although the relative proportions are expected to change as the presently unfilled requirements are placed under contract.

Figure 2
FLOOR PRICE BASIS
US MARKET-PRICED CONTRACTS
(for contracts in place at 12/31/86)



©NUEXCO 1988

Table 2
COMPARISON OF PRICING METHODOLOGIES UTILIZED
IN TRANSACTIONS INVOLVING UTILITIES IN THE NUEXCO DATABASE
1980 Through 1987

Methodology	US %	Europe %	Far East %	Canada %	Worldwide %
Defined Price	19	49	-	20	27
Market Related Price	70	28	18	40	50
Negotiated	3	13	45	20	11
Other	2	5	-	-	2.5
Defined + Market Price Combination	-	3	-	-	0.8
Defined + Negotiated Combination	-	3	9	-	2
Market Price + Negotiated Comination	-	-	-	20	0.8
Market Price + Other Combination	6	-	27	-	5.9
Total					100

5. In the last seven or eight years, the "market price with ceiling" concept has gained some prominence as buyers seek to protect themselves in the event of unexpected increases in the market price. Here, the price is the lower of market or the defined ceiling price. In contrast to the floor price, a ceiling price takes effect if the market price rises above a predetermined value, thus setting the upper price limit under the contract. A ceiling price effectively reduces the buyer's risk if the market price rises sharply. Some contracts may provide for a "market price with both floor and ceiling", although this is not currently a prevailing practice.

Negotiated Price

The "negotiated price" is a price agreed to periodically (usually annually) by buyer and seller and may provide for third party arbitration if the parties are unable to agree.

As shown in Table 2, negotiated prices are most prevalent among Far Eastern utilities. For these utilities, 45 percent of the new contracts utilized negociated pricing and 27 percent used a "market price plus other" combination. European utilities utilized defined pricing in 49 percent of their new contracts, and used market price related mechanisms in 28. For Canada, 40 percent of the transactions were market price related. In the USA, 70 percent of the contracts were tied to the market, and 19 percent used a defined price.

Quantity Requirements and Flexibilities

The total nominal quantity of uranium to be delivered under a contract, excluding options or changes in amounts permissible under the flexibility provision (discussed later), is referred to as the contract quantity. Quantities are typically specified for "delivery years", which may not necessarily coincide with calendar years. The contract may specify a maximum or minimum contract quantity, separate and distinct from the flexibility provision.

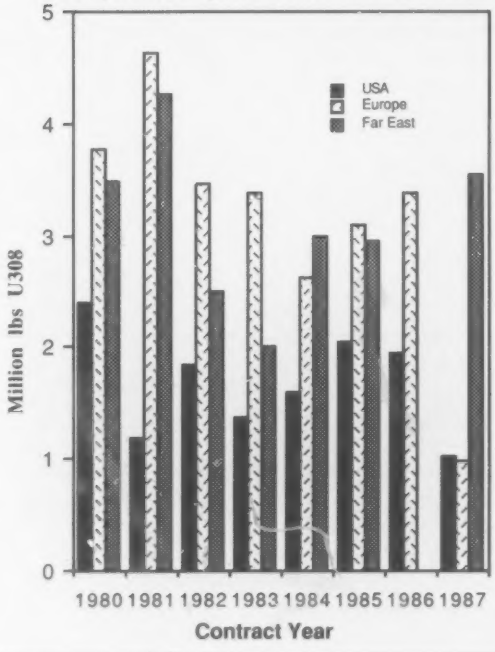
The quantity of material under contract by utilities for delivery over a longer-term (more than one year) period

©NUEXCO 1988

has tended to decrease in previous years for European and US utilities, although the quantity has remained about the same in the Far East. For the eight-year period shown in Figure 3, utility contracts averaged 3.1 million pounds U_3O_8 in Europe, 3.3 million pounds in the Far East, 1.5 million pounds in the USA, and 3.6 million pounds in Canada. This is the result of abundant supply sources, a desire for many buyers to rely more on the lower-priced spot market, and an interest in minimizing risk by diversifying supply sources. Typically, European and Far Eastern purchasers have contracted from a wider supplier base than US purchasers, the majority of which have only US and Canadian suppliers. In addition, the non-US countries usually buy in lots roughly twice the size of those bought by US utilities, and they tend to cover a larger portion of their future requirements further into the future than do their US counterparts. This is further demonstrated by US utilities' large percentage of unfilled requirements in the 1990s.

Since the resurrection of the requirements-based US DOE enrichment contract, contract flexibilities in quantities and delivery schedules have become as important to utility buyers as price. The buyer now typically has the right to increase or decrease quantities to be delivered in a future delivery period by ten to twenty percent or more.

Figure 3
AVERAGE SIZE OF CONTRACT BY YEAR
USA, EUROPE, AND FAR EAST UTILITIES



Delivery and Timing Flexibilities

Customarily, the buyer must notify the seller of its estimated uranium requirements six to eighteen months prior to delivery. If the contract includes a quantity flexibility provision, the buyer may request a greater or smaller quantity than is specified in the contract, and/or advance or defer the delivery date.

In the past, delays in a buyer's reactor construction program did not often entitle it to postpone deliveries. In recent years, however, a number of contracts have allowed such delays and other events affecting the buyer's uranium needs to adjust the delivery schedule. In addition, some contracts are on a facility-requirements basis, so the buyer eliminates all risk of having to take deliveries of material earlier than needed.

The duration of delivery period (contract term) is the time interval between the first and last delivery scheduled under contract, excluding any options or changes due to application of flexibility provisions. The contract term has shortened in recent years, particularly among US buyers. Long-term contracts calling for deliveries over ten years or more were common in the 1970s, as stability of supply was often perceived to be more important than price. Although security of long-term supply is still a valid concern, particularly in the Far East (which is almost totally dependent on imported energy sources), contract terms today are generally shorter. The average contract term for European and Far Eastern utilities' transactions was nine years, compared to the average delivery period of six years for US utilities and approximately seven years for Canadian utilities.

Origin of Material

Due to recent litigation over DOE's alleged obligation to restrict enrichment of foreign uranium for US consumption, as well as the introduction of various legislation such as the Uranium Revitalization Bill calling for foreign-uranium usage restrictions, many US buyers have requested US-origin material to insure against possible restrictions on non-US uranium in the future.

© NUEXCO 1988

Additionally, because of the different safeguard and retransfer provisions established by each country, some buyers prefer certain origins over others. Uranium bearing the "N" or "P" safeguard code are preferable to some European utilities because there are no constraints on the reprocessing of the material, and because the removal of enrichment tails is not required when N or P code material is enriched in the USSR.

Political and social concerns in various parts of the world also affect buying decisions. In the USA and many parts of Europe, for example, Namibian and South African uranium is considered unattractive for political reasons; the US government has prohibited the import of South African U_3O_8, so it is no longer a purchasing concern for US utilities. Similarly, Canadian utilities are likely to continue purchasing strictly domestic uranium despite the absence of laws mandating it.

Termination

Termination rights are normally tied to the occurrence of a stated contingency condition. A party can seldom terminate a contract unilaterally, even with payment of a penalty charge. However, some provisions found in recent contracts allow for full or partial termination in the event of:

1. an extended reactor outage or substantial delay in a reactor's startup
2. a delay or reduction in reactor demand
3. a significant differential between the market price and contract price
4. the convertor refuses or is unable to process the material to be delivered by the seller
5. the required regulatory approvals can not be obtained
6. a lender defaults and the seller has no material to deliver
7. either party files for bankruptcy
8. import restrictions are imposed
9. there is an unexcused late delivery

Future Trends

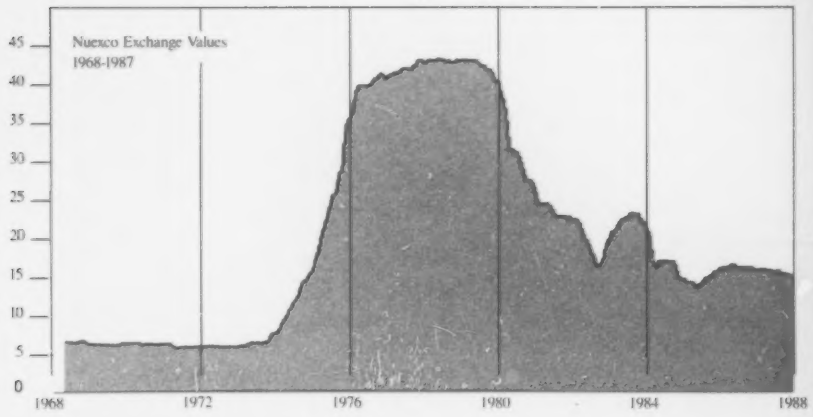
The increasing popularity of market-related pricing and more liberal flexibility provisions in quantity and delivery schedules reflects the strong buyer's market of the mid-1980s. As a result of the increased competition for sales opportunities, contract size and contract duration are both decreasing, as more buyers seek to take advantage of changing market conditions and low spot-market prices. In particular, US utilities have largely avoided contracting for the significant unfilled requirements in the 1990s due to uncertainties regarding origin requirements that might be imposed by the US Government. As these questions are resolved, US utilities are expected to begin longer-term contracting at a greater pace.

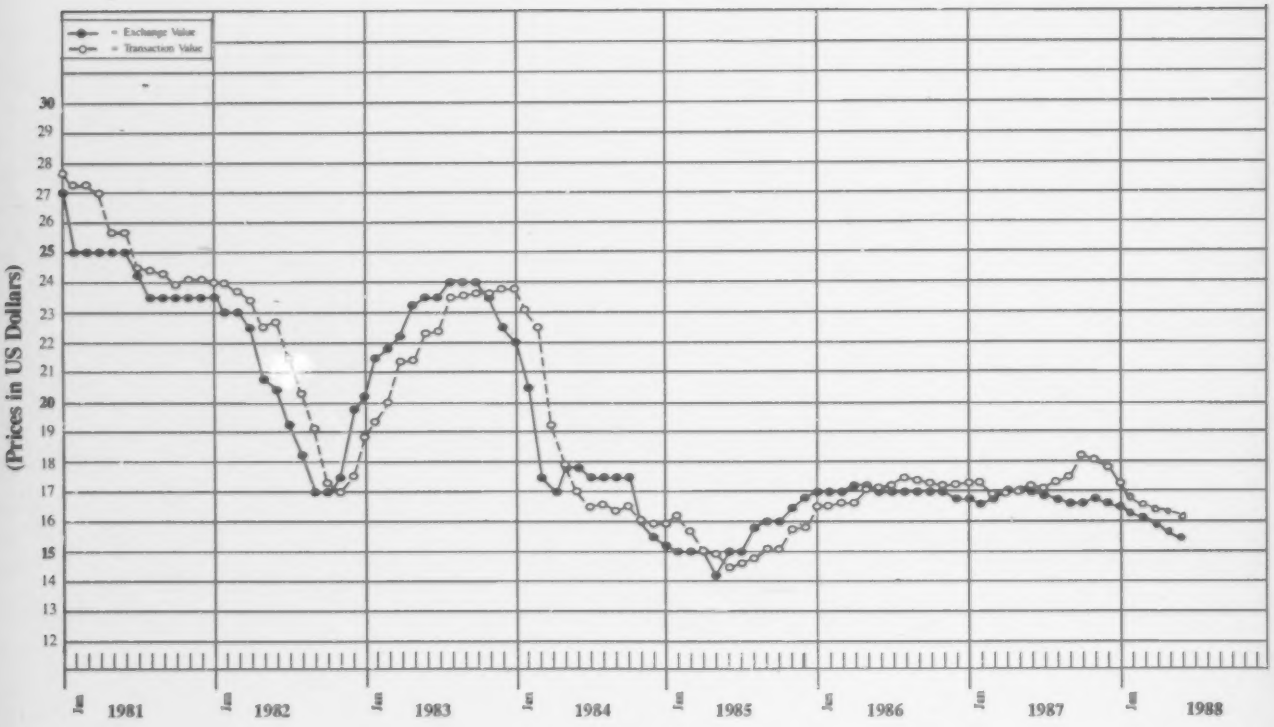
Far Eastern utilities are expected to maintain the use of negotiated pricing provisions as a result of current business practices, while European utilities will continue to employ a variety of pricing provisions. To some degree, European buyers are placing more emphasis on market-related pricing, but that is mainly due to the price discrepancy between the spot market and defined prices under older contracts. In general, European and Far Eastern utilities are more concerned about long-term supply assurances and relationships than are their US counterparts. US purchasing trends should continue to focus on market-related provisions, a circumstance that can best be attributed to pressure and influence from public utility commissions. As worldwide demand begins to outstrip supply and inventory levels, the shift in the direction of a seller's market will lead to further changes in purchasing trends.

* * *

© NUEXCO 1988

HISTORICAL MARKET DATA





©NUEXCO 1988

NUEXCO

HISTORICAL MARKET DATA

HISTORICAL EXCHANGE VALUES

Determined as of the last day of the month indicated ($US/lb. U_3O_8)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1968	—	—	—	—	—	—	—	6.35	6.35	6.40	6.45	6.50
1969	—	6.35	6.10	6.10	6.25	6.25	6.20	6.20	6.15	6.15	6.15	6.20
1970	6.30	6.30	6.30	6.30	6.30	6.30	6.30	6.20	6.15	6.15	6.15	6.15
1971	6.20	6.20	6.20	6.20	6.15	6.05	6.00	5.95	5.95	5.95	5.95	5.95
1972	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95
1973	5.95	6.00	6.10	6.20	6.45	6.50	6.50	6.50	6.50	6.50	6.75	7.00
1974	7.70	7.90	8.00	9.00	9.50	10.50	11.50	12.00	12.50	14.00	14.75	15.00
1975	16.00	16.00	18.00	20.00	21.00	23.00	24.70	26.00	26.00	28.50	30.00	35.00
1976	35.20	37.00	39.25	40.00	40.00	40.00	40.00	40.40	41.00	41.00	41.50	41.00
1977	41.35	41.50	41.60	41.60	42.00	42.25	42.25	42.25	42.40	42.75	43.20	43.20
1978	42.90	43.25	43.25	43.25	43.40	43.40	43.40	43.10	43.25	43.00	43.25	43.25
1979	43.25	43.25	43.25	43.25	43.25	43.00	42.70	42.70	42.20	42.20	41.00	40.75
1980	40.00	38.00	35.00	32.00	32.00	31.50	31.50	30.00	28.50	28.00	28.00	27.00
1981	25.00	25.00	25.00	25.00	25.00	24.25	23.50	23.50	23.50	23.50	23.50	23.50
1982	23.00	23.00	22.50	20.75	20.50	19.25	18.25	17.00	17.00	17.50	19.75	20.25
1983	21.50	21.75	22.25	23.25	23.50	23.50	24.00	24.00	24.00	23.50	22.50	22.00
1984	20.50	17.50	17.00	17.75	17.75	17.50	17.50	17.50	17.50	16.00	15.50	15.25
1985	15.00	15.00	15.00	14.25	15.00	15.00	15.75	16.00	16.00	16.50	16.75	17.00
1986	17.00	17.00	17.25	17.25	17.00	17.00	17.00	17.00	17.00	17.00	16.75	16.75
1987	16.65	16.75	17.00	17.00	17.00	16.90	16.75	16.65	16.65	16.75	16.65	16.55
1988	16.30	16.15	15.90	15.75	**15.40**							

HISTORICAL US PREMIUM (Relative to the Exchange Value)

Determined as of the last day of the month indicated ($US/lb. U_3O_8)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1986	—	—	—	—	—	—	—	—	—	—	0.65	0.75
1987	0.85	1.00	1.50	1.50	0.90	0.60	2.50	2.35	2.10	1.65	0.85	0.65
1988	0.70	0.50	0.15	.25	**.60**							

HISTORICAL TRANSACTION VALUES

Determined as of the last day of the month indicated ($US/lb. U_3O_8)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1976	—	—	—	—	39.60	39.70	39.70	40.40	40.30	40.60	40.70	40.70
1977	41.30	41.30	41.40	41.50	42.80	42.90	43.00	42.60	42.50	42.80	42.90	42.90
1978	43.10	43.30	43.70	43.60	43.60	43.20	43.30	43.40	43.40	43.60	43.40	43.70
1979	43.60	43.80	43.70	43.40	43.60	43.70	43.70	43.60	43.60	43.60	43.50	42.30
1980	42.00	39.30	38.60	38.40	37.90	37.60	37.30	31.30	30.60	29.00	28.70	27.70
1981	27.20	27.20	27.00	25.70	25.70	24.50	24.40	24.30	23.90	24.10	24.10	24.00
1982	24.00	23.70	23.40	22.60	22.70	21.50	20.30	19.10	17.30	17.00	17.55	18.80
1983	19.35	20.00	21.35	21.40	22.35	22.45	23.50	23.60	23.65	23.65	23.85	23.85
1984	23.05	22.50	19.25	17.90	17.00	16.50	16.60	16.40	16.55	16.05	15.90	15.90
1985	16.20	15.70	15.05	14.90	14.45	14.60	14.75	15.10	15.10	15.75	15.80	16.55
1986	16.55	16.70	16.70	17.10	17.05	17.20	17.50	17.45	17.35	17.25	17.30	17.35
1987	17.35	16.90	16.95	17.00	17.20	17.10	17.30	17.55	18.20	18.05	17.80	17.20
1988	16.85	16.65	16.55	16.45	**16.10**							

HISTORICAL CONVERSION VALUES

Determined as of the last day of the month indicated ($US/lb. U as UF_6)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1981	1.20	1.20	1.20	1.40	1.15	1.15	1.15	1.10	1.10	1.10	1.20	1.20
1982	1.20	1.20	1.20	1.20	1.00	1.00	1.00	0.90	1.10	1.60	1.45	1.45
1983	1.20	1.40	1.40	1.20	1.20	1.20	1.10	1.10	1.00	0.60	0.60	0.60
1984	0.60	0.30	0.80	0.80	0.80	0.00	0.00	0.80	1.00	1.00	0.80	0.80
1985	1.00	1.00	1.00	1.50	1.50	1.60	1.60	1.60	1.60	1.60	1.60	1.60
1986	1.60	1.80	1.90	1.80	1.80	1.80	1.80	1.90	1.90	1.90	1.80	1.80
1987	1.80	1.80	1.80	1.80	1.80	1.80	1.90	1.90	1.90	1.90	1.90	1.90
1988	1.90	1.80	1.80	1.80	**1.80**							

HISTORICAL UF_6 VALUES

Determined as of the last day of the month indicated ($US/kg. U as UF_6)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	—	—	—	40.50	42.50	42.50	44.00	44.50	44.50	46.00	46.00	47.00
1986	47.00	48.00	48.00	48.50	48.25	48.25	48.25	48.00	48.00	48.00	48.00	47.75
1987	47.75	48.00	48.00	48.00	47.75	47.75	47.50	47.00	46.75	47.00	47.00	47.00
1988	46.50	46.00	45.50	45.25	**44.75**							

HISTORICAL US UF_6 PREMIUM (Relative to the UF_6 Value)

Determined as of the last day of the month indicated ($US/kg U as UF_6)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1986	—	—	—	—	—	—	—	—	—	—	2.50	2.50
1987	2.50	2.50	3.50	3.00	2.25	1.75	6.50	6.00	4.25	3.10	2.25	2.00
1988	1.25	1.25	0.50	0.50	**1.00**							

HISTORICAL SWU VALUES (at 0.30 Percent Tails Assay)

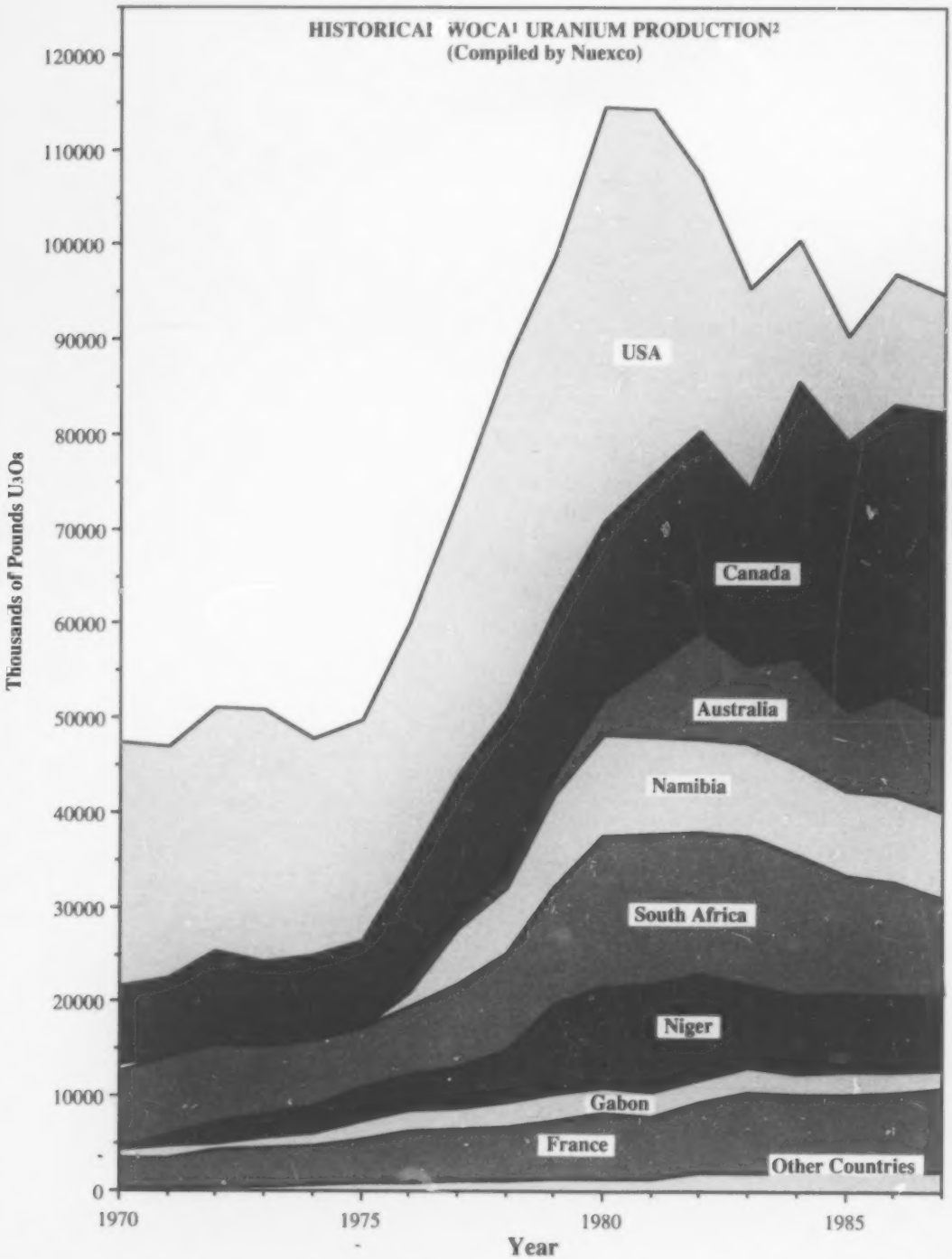
Determined as of the last day of the month indicated ($US per SWU)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1986	80	80	80	80	75	78	78	78	78	78	80	80
1987	80	80	77	77	75	73	75	75	73	69	73	73
1988	73	73	70	68	**68**							

©NUEXCO 1988

NUEXCO

HISTORICAL MARKET DATA



[1] WOCA = World Outside of Centrally-Planned Economic Areas.
[2] 1987 production data are preliminary.

US URANIUM MARKETING ACTIVITIES STATISTICS[1]
(Compiled from data published by the US Energy Information Administration)

Year	Total Production[2] (million pounds U_3O_8)	Deliveries to Domestic Utilities[3] (million pounds U_3O_8)	Average Price of Delivered Uranium ($/lb. U_3O_8)	Quantity of Uranium Imported[4] (million pounds U_3O_8)	Average Price of Imported Uranium ($/lb. U_3O_8)	Quantity of Uranium Exported (million pounds U_3O_8)
1976	25.5	n/a	n/a	3.6	n/a	1.2
1977	29.9	n/a	n/a	5.6	n/a	4.0
1978	37.0	n/a	n/a	5.2	n/a	6.8
1979	37.5	33.0[5]	$23.85[5]	3.0	n/a	6.2
1980	43.7	35.0[5]	$28.15[5]	3.6	$43.10	5.8
1981	38.5	32.6[5]	$34.65[5]	6.6	$32.90	4.4
1982	26.9	27.1	$38.37	17.1	$27.23[6]	6.2
1983	21.2	24.2	$38.21	8.2	$26.16	3.3
1984	14.9	22.5	$32.65	12.5	$21.86	2.2
1985	11.3	21.7	$31.43	11.7	$20.08	5.3
1986	13.5	18.9	$30.01	13.5	$20.07	1.6

[1]Sources: 1979: US Department of Energy, Assistant Secretary for Resource Applications, Office of Uranium Rresources and Enrichment, *Survey of United States Uranium Marketing Activity*, DOE/RA-0053 (Washington DC, July 1980). 1980-1981: US Department of Energy, ASsistant Secretary for Nuclear Energy, Office of Uranium Enrichment and Assessment, *Survey of United States Marketing Activity*, DOE/NE-0013 and DOE/NE-0013/1 (Washington DC, June 1981 and July 1982). 1982: Energy Information Administration, *1982 Survey of United States Marketing Activity*, DOE/EIA-0403 (Washington DC, September 1983). 1983: Energy Information Administration, *Survey of United States Marketing Activity 1983*, DOE/EIA-0403(83) (Washington DC, August 1984). 1984: Energy Information Administration, Form EIA-858, "Uranium Industry Annual Survey" (1984). 1985: Energy Information Administration, Form EIA-858, "Uranium Industry Annual Survey" (1985).

[2]Sources: 1976-11982: US Department of Energy, Grand Junction Area Office, *Statistical Data of the Uranium Industry*, GJO-100 (Grand Junction, Colorado, January 1983). 1983: Calculated by the staff of the Nuclear and Alternate Fuels Division, Office of Coal, Nuclear, Electric and Alternate Fuels, Energy Information Administration, from US Department of Energy, Grand Junction Area Office data files. 1984: Energy Information Administration, Form EIA-858, "Uranium Industry Annual Survey" (1984). 1985: Energy Information Administration, Form EIA-858, "Uranium Industry Annual Survey" (1985).

[3]Excludes direct imports by domestic utilities.

[4]Includes imports by domestic utilities and domestic suppliers.

[5]Includes delivery commitments to domestic utilities and agents.

[6]Computation of quantity-weighted average price excludes the quantity associated with a large exchange (swap) transaction that occurred in 1982.

© NUEXCO 1988

NUEXCO

HISTORICAL MARKET DATA

VOLUME AND PRICE OF URANIUM DELIVERIES TO THE EUROPEAN COMMUNITY[1]
(Compiled from data published by the Euratom Supply Agency)

Year	Volume of Deliveries to the EC[2] (in MTU)	Percentage of Deliveries Made Under Spot Contracts	Medium or Long-Term Contracts[3,4]		Spot Contracts[3,4]	
			Average Price in ECU per pound U_3O_8	Average Price in US Dollars per pound U_3O_8	Average Price in ECU per pound U_3O_8	Average Price in US Dollars per pound U_3O_8
1977	n/a	n/a	n/a	n/a	n/a	$41.00
1978	n/a	n/a	n/a	n/a	n/a	$43.00
1979	10,000	n/a	n/a	n/a	n/a	$44.50
1980	8,600	n/a	n/a	$36.00	n/a	$35.00
1981	13,000	less than 10	n/a	$33.25	n/a	$28.00
1982	12,500	less than 10	ECU 32.25	$32.00	ECU 24.25	$24.00
1983	13,500	less than 10	ECU 34.75	$31.00	ECU 26.00	$23.25
1984	11,000	less than 10	ECU 37.75	$29.75	ECU 24.50	$19.25
1985	11,000	11.5	ECU 38.00	$29.00	ECU 19.50	$15.00
1986	12,000	9.5	ECU 31.50	$31.00	ECU 18.00	$17.75

[1]The twelve European Community member nations are Belgium, Denmark, France, the Federal Republic of Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, and the United Kingdom; prior to January 1986, Spain and Portugal were not members of the EEC.

[2]The only deliveries taken into account are those made to final users, namely the electric utilities or their procurement organizations; deliveries to middlemen or fuel cycle companies are not included. The sales between utilities in the Community are also excluded. The quantities covered are those which were entered into accounting records during the year stated.

[3]For deliveries made under medium or long-term contracts (i.e., for which the time between the date of signature and the date of the last delivery exceeds one year) the prices were expressed in seven different currencies. In order to calculate an average price, these prices have been converted into European Currency Units (ECU) and US dollars. The average prices were weighted by quantity and converted on the basis of the average annual exchange rate of the different currencies against the ECU and US dollar.

[4]Exchange rates are published by European Communities Statistical Office and the International Monetary Fund.

©NUEXCO 1988

AUSTRALIA

		Consumer Price Index[1] (1980/1981 = 100)	Price Index of Materials Used in Manufacturing Industry — All Groups[2] (1984/1985 = 100)	Award Rates of Pay Indexes Australia - Adult Males In Mining Wage Earners, Weekly Rates[3] (June 1976=100)
1975	Avg.[4]	57.9	36.3	82.1
1976	Avg.	65.7	40.7	99.7
1977	Avg.	73.8	46.3	110.8
1978	Avg.	79.7	52.0	117.7
1979	Avg.	86.9	69.5	127.9
1980	Avg.	95.8	83.1	140.8
1981	Avg.	105.0	85.9	154.1
1982	Avg.	116.7	89.0	174.9
1983	Avg.	128.5	96.9	181.9
1984	Avg.	133.6	98.0	194.4
1985	Avg.	142.6	107.3	202.7
1986	Avg.	155.5	101.5	213.0
1987	Avg.	—	108.9	—
Jan	1987	—	106.2	215.9
Feb	1987	—	108.9	216.5
Mar	1987	164.7	108.4	222.2
Apr	1987	—	108.3	222.2
May	1987	—	108.1	222.0
June	1987	167.2	108.1	222.2
July	1987	—	108.7	222.5
Aug	1987	—	110.5	222.2
Sep	1987	170.0	109.3	222.8
Oct	1987	—	108.6	223.0
Nov	1987	—	110.0	222.6
Dec	1987	172.9	111.9	—
Jan	1988	—	112.4	—
Feb	1988	—	112.3	—

P = Preliminary R = Revised since last month

[1]Weighted average of six State capital cities (1975 to 1980), and eight capital cities from 1981 (Base: Financial year July 1980 to June 1981 =100.0). Figures shown at end of quarter represent quarterly average.

[2]Australian Bureau of Statistics, Canberra: "Price Index of Materials Used in Manufacturing Industry" (Catalogue No. 6411.0).

[3]Australian Bureau of Statistics, Canberra: "Award Rates of Pay Indexes, Australia" (Catalogue No. 6312.0). Figures for the latest fourteen months shown are subject to revision.

[4]Monthly data for the period 1967 to 1986 appear in Report 233.

©NUEXCO 1988

NUEXCO

GOVERNMENT STATISTICS

CANADA

		Industrial Products Price Index: All Commodities[1] (1981 = 100)	Consumer Price Index: All Items (1981 = 100)	Wage-earner Data: Average Hourly Earnings (C$)[2]				
				Uranium Mines (SIC 057)	Metal Mines (SIC 051-059)	Mines, Quarries and Oil Wells[3] (SIC 051-099)	Metal Rolling, Casting and Extruding (SIC 298)	Chemicals and Chemical Products Industries (SIC 372-379)
1979	Avg.	80.0	80.7	—	—	—	—	—
1980	Avg.	90.7	88.9	—	—	—	—	—
1981	Avg.	100.0	100.0	—	—	—	—	—
1982	Avg.	106.7	110.8	—	—	—	—	—
1983	Avg.	110.4	117.2	17.22	—	14.18	10.67	11.10
1984	Avg.	115.4	122.3	17.89	—	14.97	11.11	11.68
1985	Avg.	118.6	127.2	18.53	16.48	15.56	11.85	12.12
1986	Avg.	119.6	132.4	19.38	16.70	15.76	12.28	12.58
Jan	1987	120.0	135.2	19.53	16.93	16.03	12.58	12.89
Feb	1987	119.8	135.8	20.33	17.20	16.21	12.66	13.11
Mar	1986	120.4	136.4	20.04	17.14	16.15	12.58	13.02
Apr	1987	121.2	137.0	20.47	17.38	16.26	11.99	13.27
May	1987	122.0	137.8	20.50	17.12	15.96	11.44	13.19
June	1987	122.5	138.2	20.23	16.94	15.70	12.77	12.88
July	1987	123.2	139.2	19.75	16.73	15.63	12.52	12.98
Aug	1987	123.8	139.3	19.64	16.98	15.87	12.65	13.03
Sep	1987	124.1	139.3	19.85	17.20	16.25	12.57	13.40
Oct	1987	124.5	139.8	20.06	17.31	16.33	13.01	13.37
Nov	1987	125.1	140.4	20.47	17.50	16.50	12.63	13.53
Dec	1987	125.5	140.5	20.62	17.31	16.37	12.54	13.75
Jan	1988	126.3R	140.8	20.70	17.54	16.65	12.82	13.73
Feb	1988	125.7	141.3	20.94	17.97R	17.07R	13.01R	13.69R
Mar	1988	126.0R	142.0	20.64P	18.10P	17.00P	13.11P	13.67P
Apr	1988	126.3	142.5	—	—	—	—	—

P = Preliminary R = Revised since last month

[1]Statistics Canada, Prices Division, Ottawa: "Industry Price Indexes" (Catalogue 62-011). Indexes for the most recent six months shown are subject to revision. This category was formerly known as "Manufacturing." Monthly data for the period 1967 to 1986 is found in Report 233.

[2]Statistics Canada, Labour Division, Employment and Payrolls Section, Ottawa: "Employment, Earnings and Hours." Monthly data for the period 1983 to 1986 is found in Report 233.

[3]Reports 175 through 185 list this series title incorrectly as "Metal Mining, Including Milling (SIC 050-099)."

©NUEXCO 1988

REPUBLIC OF SOUTH AFRICA

		Average Declared Working Costs per Metric Ton of Gold Ore Milled (Rand)[1]	Tonnage-Weighted Index of Average Working Costs per Metric Ton of Gold Ore Milled (March 1982 = 100)[2]	Consumer Price Index[3] (1985 = 100)	Production Price Index All Groups[4] (1980 = 100)	Total Employment in Mining and Quarrying[5]	Total Salaries and Wages in Mining and Quarrying (1,000 Rand)[5]
1975	Avg.	16.71	—	29.4	52.1	639,473	1,003,217
1976	Avg.	19.30	—	32.7	59.9	671,240	1,212,983
1977	Avg.	23.87	—	36.3	67.7	712,006	1,420,670
1978	Avg.	27.14	—	40.3	74.3	658,261	1,502,975
1979	Avg.	30.18	—	45.6	85.6	686,599	1,795,638
1980	Avg.	35.53	—	51.9	100.0	709,042	2,237,689
1981	Avg.	41.89	—	59.8	113.6	722,918	2,756,928
1982	Avg.	47.25	104.2	68.6	129.4	702,041	3,181,584
1983	Avg.	51.88	115.0	77.1	143.1	700,901	3,563,282
1984	Avg.	58.95	130.3	86.0	155.1	711,511	4,134,390
1985	Avg.	68.76	151.6	100.0	181.2	724,587	4,778,612
1986	Avg.	80.22	177.9	118.6	216.6	756,637	5,767,950
1987	Avg.	—	—	137.7	246.8	—	—
Jan	1987	—	—	128.9	233.9	750,496	529,682
Feb	1987	—	—	130.3	237.0	758,230R	600,258
Mar	1987	88.17	197.1	132.4	239.6	763,003R	536,033
Apr	1987	—	—	134.1	242.5	765,309R	535,876
May	1987	—	—	135.6	243.6	761,026R	531,732
Jun	1987	90.74	203.5	136.6	244.9	763,319R	571,407
July	1987	—	—	138.2	246.8	764,810R	624,954
Aug	1987	—	—	140.2	249.9	751,338	564,387
Sep	1987	100.79	224.7	142.0	252.4	742,417	587,707
Oct	1987	—	—	143.6	255.5	725,599	599,116
Nov	1987	—	—	144.8	256.3R	734,630	616,725
Dec	1987	100.34	267.0	145.9	258.3	712,896	613,262
Jan	1988	—	—	147.2	261.5	—	—
Feb	1988	—	—	148.2	265.7	—	—
Mar	1988	102.96	232.4	150.2	268.4	—	—
Apr	1988	—	—	151.9	—	—	—

P = Preliminary R = Revised since last month

[1]Chamber of Mines of South Africa, Johannesburg: "Analysis of Working Results," published quarterly. Historical Data by month appears in Report 236.

[2]Page 16 of Report 178 contains description and calculation of index, and page 24 of Report 178 lists figures for 1982.

[3]Central Statistical Service, Pretoria: All income groups-weighted average, Historical Data by month appears in Report 236.

[4]Central Statistical Service, Pretoria: All commodities for consumption in South Africa.

[5]Central Statistical Service, Pretoria: Historical Data by month appears in Report 236.

© NUEXCO 1988

NUEXCO

GOVERNMENT STATISTICS

UNITED STATES

		Producer Price Index[1]		Consumer Price	GNP Implicit Price	Gross Average Hourly Earnings of Production or Non-supervisory Workers (US$)[4]			
		Industrial Commodities (1982 = 100)	All Commodities (1982 = 100)	Index[2] (1982-1984 = 100)	Deflator[3] (1982 = 100)	Metal Mining (SIC 10)	Primary Non-ferrous Metals (SIC 333)	Chemicals and Allied Products (SIC 28)	Electric and Electronic Equipment (SIC 36)
1980	Avg.	88.0	89.8	82.4	85.7	10.26	10.63	8.30	6.94
1981	Avg.	97.4	98.0	90.9	94.0	11.55	11.98	9.12	7.62
1982	Avg.	100.0	100.0	96.5	100.0	12.31	12.93	9.96	8.21
1983	Avg.	101.1	101.3	99.6	103.9	12.58	13.43	10.58	8.67
1984	Avg.	103.3	103.7	103.9	107.7	13.05	13.43	11.07	9.04
1985	Avg.	103.7	103.2	107.6	111.2	13.38	13.74	11.56	9.46
1986	Avg.	100.0	100.2	109.6	114.1	13.20	13.49	11.98	9.65
1987	Avg.	102.6	102.8	113.6	—	—	—	—	—
Jan	1987	100.4	100.5	111.2	—	12.94	12.98	12.18	9.84
Feb	1987	100.8	101.0	111.6	—	12.99	12.83	12.21	9.84
Mar	1987	101.1	101.2	112.1	116.1	13.04	12.79	12.24	9.84
Apr	1987	101.6	101.9	112.7	—	13.16	12.90	12.30	9.82
May	1987	101.9	102.6	113.1	—	12.97	12.92	12.31	9.83
Jun	1987	102.4	103.0	113.5	117.2	13.05	12.93	12.27	9.84
Jul	1987	103.1	103.5	113.8	—	13.06	13.07	12.37	9.89
Aug	1987	103.7	103.8	114.4	—	13.03	13.07	12.34	9.90
Sep	1987	103.5	103.7	115.0	117.8	13.19	13.44	12.56	9.98
Oct	1987	104.0	104.1	115.3	—	12.96	13.06	12.52	9.95
Nov	1987	104.2	104.2	115.4	—	12.89	13.10	12.56	10.00
Dec	1987	104.1	104.1	115.4	118.7	12.78	13.14	12.62	10.05
Jan	1988	104.3	104.5	115.7	—	13.02	13.00	12.56	10.03
Feb	1988	104.4	104.6	116.0	—	13.13R	12.93R	12.55R	10.04
Mar	1988	104.7	104.9	116.5	119.4	13.14P	13.15P	12.55R	10.05R
Apr	1988	105.6	105.8	117.1	—	—	—	12.52P	10.10P

P = Preliminary R = Revised since last month

[1]US Bureau of Labor Statistics, Washington, D.C.: "Producer Prices and Price Indexes," (formerly "Wholesale Prices and Price Indexes"). Producer Price Indexes are revised four months after they are first released to reflect the availability of late reports and corrections by respondents. Historical data is presented in Report 233.

[2]US Bureau of Labor Statistics, Washington, D.C.: Consumer Price Index for All Urban Consumers, US City Average, All Items. Historical data is presented in Report 233.

[3]US Department of Commerce, Washington, D.C.: Bureau of Economic Analysis, National Income and Wealth Division: "Survey of Current Business." The GNP Implicit Price Deflator is published quarterly, and seasonally adjusted. Historical data is presented in Report 233.

[4]US Bureau of Labor Statistics, Washington, D.C.: "Employment and Earnings." All data based on 1972 revision of SIC Manual. Historical data is presented in Report 233.

© NUEXCO 1988

NUEXCO

SERVICE LOCATIONS

DENVER, COLORADO, USA
Three Park Central
1515 Arapahoe Street
Suite 900
Denver, Colorado 80202
Telephone: (303) 893-4015
Telecopy: (303) 825-4821
Telex: 450202 (NUEXCO DVR)

SAN FRANCISCO, CALIFORNIA, USA
Building 1, Suite 105
3000 Sand Hill Road
Menlo Park, California 94025
Telephone: (415) 854-1510
Telecopy: (415) 854-2115
Telex: 470674 (NUEXCO)

TOKYO, JAPAN
Ohkura Building
1-4-10 Shiba Daimon
Minato-ku, Tokyo, Japan
Telephone: (81-3) 431-6025
Telecopy: (81-3) 434-6674
Telex: 242-5060 (JATECH J)

GENEVA, SWITZERLAND
13 chemin du Levant
01210 Ferney-Voltaire
France
Telephone: (33-50) 428035
Telecopy: (33-50) 428526
Telex: 385288 (NUEXCO F)

ZURICH, SWITZERLAND
135 Zurichstrasse
CH-8700 Küsnacht
Switzerland
Telephone: (41-01) 910-8977
Telecopy: (41-01) 910-6672
Telex: 58877 (COMAG)

HONG KONG
1403 Shui On Centre
6-8 Harbour Road, Wanchai
Hong Kong
Telephone: (852-5) 865-1418
Telecopy: (852-5) 865-2721
Telex: 67206 (CNITC)

WASHINGTON, D.C., USA
2603 Valley Drive
Alexandria, Virginia 22302
Telephone: (703) 549-0880
Telecopy: (703) 549-0882

19636 Club House Road, Suite 110
Gaithersburg, Maryland 20879
Telephone: (301) 670-8660
Telecopy: (301) 670-8668
Telex: 248253 (SWUCO UR)

REPRESENTATIVES

AUSTRALIA **James G. Munro**
7 Nevada Street
North Balwyn, Victoria 3104
Australia
Telephone: (61-3) 857-6823
Telecopy: (61-3) 857-8258

SOUTH AFRICA **Chris I. von Christierson**
Southern Prospecting (Pty) Limited

Mailing Address
Post Office Box 61409
Marshalltown 2107
Republic of South Africa

Telephone: (27-11) 838-1868
(27-11) 834-4211

Street Address
10th Floor
Eagle Star House
70 Fox Street
Johannesburg 2001
Telecopy: (27-11) 834-3148
Telex: 4-89878-SA

UNITED STATES **Harold C. Lindberg**
83-A Hardee Lane
Whispering Pines, North Carolina 28327
Telephone: (919) 949-3622

JAPAN **Kazuo Yokota**
Japan Tech Services
Ohkura Building (3F)
1-4-10 Shiba Daimon
Minato-ku, Tokyo, Japan
Telephone: (81-3) 431-6031, 6025
Telecopy: (81-3) 434-6674
Telex: 242-5060 (JATECH J)

TAIWAN **Edward Bee**
Bee & Liang Company, Ltd.
14 FL Universal Business Center
NO. 663, Tun Hwa South Road
Post Office Box 1396
Taipei, Taiwan R.O.C.
Telephone: (886-2) 704-9630
Telecopy: (886-2) 703-4625
TWX 785-11570 (BEELIANG)

UNITED STATES **Ralph O. Smith**
141 Braemar Drive
Cheshire, Connecticut 06410
Telephone: (203) 272-6246
Telecopy: (203) 271-1346

INTERNATIONAL HEADQUARTERS

Three Park Central, Suite 900
1515 Arapahoe Street
Denver, Colorado 80202

Telephone: (303) 893-4015
Telecopy: (303) 825-4821
Telex: 450202/NUEXCO DVR